REMARKS/ARGUMENTS

Claims 1, 10-13, 15, 16, 30, and 35 are pending in the application. In this response, no claims are amended.

The Examiner rejected claims 1, 10-13, 15, 16, 30, and 35 as obvious under 35 USC § 103(a). The Examiner cited US Patent No. 5,868,948 to Fuji et al. (Fuji et al. hereinafter), in combination with the admitted prior art and US Patent No. 5,022,130 to EerNisse et al. (EerNisse et al. hereinafter) as the basis for this rejection.

The rejected independent claim 1 recites a process for producing an acoustic resonator device in which a first film is deposited on a substrate and patterned. A continuous piezoelectric layer is deposited over the patterned first metal layer. A second metal layer is deposited over the piezoelectric layer and patterned after which some or all of the piezoelectric material "not involved in signal transmission" is removed to limit lateral propagation losses to un-etched regions of the acoustic resonator device. Independent claim 13 recites a method in which some of the continuous piezoelectric layer is removed by selective etching to limit propagation of energy in lateral modes. Thus, both independent claims 1 and 13 recite a method for making an acoustic resonator device in which the lateral propagation of energy to other regions on the substrate is limited. Applicants submit that nothing in the cited references teach or suggest a method in which piezoelectric materials are removed to reduce or eliminate propagation of energy to other regions of the substrate that might be adversely affected by that energy.

This concept is clearly not taught or suggested by Fuji et al. Fuji et al. is concerned exclusively with etching

dielectric materials (primarily ferroelectric materials). As such, Fuji et al focuses exclusively on forming discrete devices. Note specifically FIG. 12 of Fuji et al. which is a cross-section of a pyroelectric infrared detector formed using the etching techniques described by Fuji et al. Applicants observe that this device is discrete. The propagation of energy from the pyroelectric film 1203 to other ferroelectric regions on the substrate 1201 is not a problem that is addressed, or inherently solved by Fuji et al.

Regarding the Examiner's comment that Fuji et al. inherently limits lateral propagation losses, applicants strenuously disagree. To be inherent, something must "naturally and inevitably occur" from what is disclosed in the references. *Talbert Fuel Sys Patents Co. v. UNOCAL Corp.*, 275 F.3d 1371 (Fed. Cir. 2002) *citing, Continental Can Co. v. Monsanto Co.*, 948 F.2d 1264, 1269, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). In *Continental Can,* the Court of Appeals stated:

> To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. *Id.* at 1268.

Given Fuji's silence on lateral propagation and failure to differentiate the portions of the ferroelectric materials described therein that are "involved in signal propagation" and those that are not, applicants submit that in no way is the removal of piezoelectric material in the manner required by the claims of the present invention inherent from Fuji et al. The Examiner has failed to show why such disclosure is inherent, either from evidence in Fuji et al. or extrinsic

evidence.

Further in this regard, the applicants describe "piezoelectric material not involved in signal transmission" on page 4, lines 4-5 of their specification. According to applicants' explanation of this term, at least a portion of the piezoelectric material not between the electrodes meets this definition. Thus, according to applicants' invention, the piezoelectric material not involved in signal transmission is identified and, once identified, some or all of it is removed.

Fuji et al. does not provide any mechanism to identify whether or not a portion or portions of the dielectric material are or are not involved in signal transmission. In fact, in certain embodiments of Fuji et al. it is impossible to make this determination at the time the dielectric is removed. Referring to FIG. 6 of Fuji et al., there remains a tapered dielectric region extending along the longer, lower electrode 402 but extending beyond the upper electrode 404. Fuji et al. is silent as to whether or not a portion of the dielectric that was removed was or was not involved in signal transmission. Is it the Examiner's position that the removal of dielectric material not involved in signal transmission is inherent in this embodiment? Similarly, in the embodiment described in FIGS. 9-13, there is either no top electrode or the top electrode is formed after the dielectric is patterned. Is it the Examiner's position that, inherently in these embodiments, the dielectric not involved in signal transmission was identified and at least a portion removed even though the electrode structure that helps distinguish between those portions of the dielectric layer that are involved in signal transmission and those are not was not even formed at the time the dielectric was removed? It is for these reasons that applicants submit that the removal of piezoelectric material not involved in signal transmission is

clearly not inherent in Fuji et al.

Therefore, applicants submit that Fuji et al. does not disclose or suggest a method in which the piezoelectric material is etched to "limit the propagation of energy to un-etched regions" because there are no "un-etched" regions described in Fuji et al. to which the energy can laterally propagate. Similarly, with regard to claim 13, Fuji et al. does not disclose or suggest etching the dielectric material to "limit propagation of energy in lateral modes" as required by claim 13. Therefore, Fuji et al. does not disclose or suggest the need to selectively etch the dielectric material to limit lateral propagation. It is for this reason that Fuji et al. does not render obvious applicants' invention.

In tacit recognition of the deficiencies of the Fuji et al. disclosure with regard to teaching all elements of the claimed invention, the Examiner references the prior art discussed by the applicants and EerNisse at al. to further support the rejection. However, as discussed below, neither reference, either alone or in combination with Fuji et al., discloses or suggests the method recited in claims 1, 13 and the claims that depend therefrom.

With regard to what the Examiner denominates as "the admitted prior art" certainly nothing there discloses or suggests removing the dielectric material from the regions "not involved in signal transmission." In fact, nothing in the "admitted prior art" teaches or suggests any differentiation between the portion of the dielectric involved in signal transmission and the portion not so involved. Therefore, applicants submit that the requisite teaching, suggestion or motivation is absent from both the admitted prior art and Fuji et al. to combine the two references to render obvious the

claimed method that: 1) identifies a region of piezoelectric material not involved in signal transmission and 2) removes at least a portion of that region for the express purpose of reducing lateral propagation losses (claim 1) or limiting lateral propagation of energy (claim 13) into and through the identified regions.

The Examiner contends that EerNisse et al., in combination with Fuji et al. and the admitted prior art, renders obvious the claimed method. EerNisse et al., similar to Fuji et al. and the admitted prior art, does not contain the requisite teaching, suggestion or motivation that is required to support the Examiner's combination of these references. Specifically, EerNisse et al. describes removing or abrading the bulk crystal in the resonator devices described therein to reduce the gamma vector of the device (the gamma vector, described in Col. 1, ll. 45-46 of EerNisse et al., is the resonator's sensitivity to acceleration). EerNisse et al. is concerned with controlling the acceleration sensitivity of the resonator by reducing the gamma vector, and not reducing lateral propagation losses. Thus, in stark contrast to the present invention, EerNisse et al. describes a process in which the gamma vector of a device is measured and compared against a desired value. If the gamma vector is greater then a desired value, then the bulk crystal is either added to or reduced to bring about a desired reduction in the gamma vector. Note that EerNisse et al. does not identify a portion of piezoelectric material not involved in signal transmission and remove that portion. Indeed, EerNisse et al. contemplates removing or changing the portion of the crystal that is active. See Col. 2, ll. 49-55 ("In particular, it has been found that by adding bulk to selected locations on the surface of the crystal, the shape and/or location of the active region or vibration of the crystal can be changed and thus the

acceleration sensitivity (represented by the gamma vector) of the crystal can be effectively reduced."). Therefore, EerNisse et al. does not teach one skilled in the art to identify regions of the piezoelectric material not involved in signal transmission and removing at least a portion of the piezoelectric material to either limit lateral propagation losses into those regions or limit lateral propagation of energy losses. In view of the foregoing, the Examiner is respectfully requested to withdraw the obviousness rejection of claims 1 and 13.

With regard to the dependent claims, the Examiner rejected claims 15, 16, 30 and 32 as obvious in view of Fuji et al. Claim 30 depends from claim 1 and is patentable over Fuji et al. for the same reasons that claim 1 is patentable over Fuji et al. Claims 15, 16 and 32 depend from claim 13 and are patentable over Fuji et al. for the same reasons that claim 13 is patentable over Fuji et al. The Examiner is respectfully requested to withdraw the obviousness rejection of claims 15, 16, 30 and 32.

The Examiner rejected claims 10-12 based upon the cited art (Fuji et al., the admitted prior art and EerNisse et al.) and further in view of US Patent No. 5,129,132 to Zdeblick et al. (Zdeblick et al. hereinafter). Claims 10-12 depend from claim 1 and are patentable over the cited references for the same reasons that claim 1 are patentable over the cited references. Although Zdeblick et al. generally describes forming a device having multiple piezoelectric layers, and describes the use of lithographic patterning to fabricate some of those layers, the similarities between the Zdeblick disclosure and applicants' claims end there. The piezoelectric material in Zdeblick et al. is used for bimorph cantilevers. As such, Zdeblick et al. clearly does not disclose or suggest

(either actually or inherently) removing portions of the piezoelectric material to limit lateral propagation of energy in the remaining piezoelectric material. Consequently, applicants submit that claims 10-12 are not obvious in view of the cited references. The Examiner is respectfully requested to withdraw the obviousness rejection of claims 10-12.

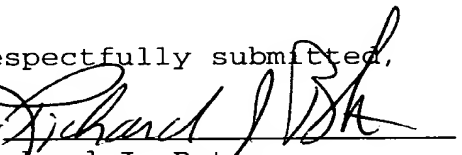
In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

Dated: February 9, 2007

Respectfully submitted,

By 

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